REMARKS

Claims 1-20 were originally presented in the subject application. Claims 1-3, 6-10, 13-16, 19 and 20 were amended, and claims 4-5, 11-12 and 17-18 canceled without prejudice, in a response dated October 23, 2007. Claims 8-10, 13-16 and 19-20 were canceled without prejudice in a response dated April 21, 2008. No claims have herein been amended, added or canceled. Therefore, claims 1-3 and 6-7 remain in this case.

Applicant respectfully requests reconsideration and withdrawal of the sole remaining ground of rejection.

35 U.S.C. §103 Rejection

The Final Office Action rejected claims 1-3 and 6-10, 13-16, 19-20 under 35 U.S.C. §103(a), as being obvious over DeBettencourt et al. (U.S. Patent No. 6,279,001) in view of Wood et al (U.S. Patent 7,082,606). Applicant respectfully, but most strenuously, traverses this rejection.

Claim 1 recites a method of balancing workload of a grid computing environment, grid computing enabling virtualization of distributed computing and data resources to create a single system image from a plurality of systems. The method comprises obtaining scheduler information, by a manager daemon within one system of a plurality of systems in a grid computing environment, from a scheduler of another system of the grid computing environment. The scheduler information includes current free nodes of the another system, job queue of waiting jobs for the another system, shadow time for the next waiting job of the another system indicating how long the job needs to wait for resources, and one or more resources currently unavailable due to shadow time, wherein the plurality of systems are at least one of heterogeneous and geographically distant from each other. The method further comprises performing by the manager daemon workload balancing among at least two systems of the plurality of systems in the grid computing environment, each system of the at least two systems comprising a scheduler to schedule workload on its system. The workload balancing using at least a portion of the obtained scheduler information, and wherein the workload balancing

comprises backfill scheduling a job. The backfill scheduling allows the job to run out of order as long as it does not affect the start time of another job scheduled to execute.

As an initial matter, Applicant continues to submit that DeBettencourt does not involve a grid computing system as would be understood by one skilled in the art. Instead, DeBettencourt involves a typical serial web server arrangement. However, there are additional aspects as remarked below that are not taught or suggested as well.

Against, for example, the scheduler of claim 1, the final Office Action cites to the agent 106 of DeBettencourt (at column 10, lines 30-36). However, the alleged scheduler (agent 106) does not schedule the serving of web pages by the associated web server. Instead, it is the manager 110 of all the web servers that controls which web server serves which page request, the agent merely communicating with the manager. See, for example, DeBettencourt at column 6, lines 29-30.

As another example, against the wherein clause of the obtaining aspect of claim 1, the final Office Action cites to no section of DeBettencourt. In fact, the servers of DeBettencourt are neither heterogeneous nor geographically distant from each other.

As still another example, against the claimed shadow time, the final Office Action cites to DeBettencourt at column 13, line 16 (the agent 106 can determine server queue delay); column 11, Table 2 (list of performance stats available from UNIX and Windows NT operating systems); and Column 12, Table 3, item 20 (available information on each web page request includes time required to retrieve content).

As set forth in claim 1, shadow time indicates how long the next waiting job of another system needs to wait for resources. Shadow time does not refer to how long a job has to wait in the queue, but how long before resources needed to execute the job will become available. For example, even if a job is next up in a queue, if the necessary resources are not available to run the job, then it cannot run. Thus, server queue delay (the first DeBettencourt cite) is not shadow time. Table 2 also does not list shadow time among the basic available performance stats.

Finally, item 20 in Table 3 refers to processing time for a web page request, not time to wait for needed job resources.

As yet another example, against the performing aspect of claim 1 (minus backfill scheduling), the final Office Action cites to DeBettencourt at column 13, lines 20-25. However, the performing aspect makes clear that each system has a scheduler to schedule workload on its system. Also made clear in DeBettencourt is that Manager 110 manages the web servers, not the agents. Thus, there is no scheduler in each system. See, for example, DeBettencourt at column 9, line 45 to column 10, line 16. The agents send information and statistics about the web page requests to the manager, but not scheduling information, which is recited in claim 1 as being used to perform workload balancing.

Applicant submits the addition of Wood to DeBettencourt does not remedy the multiple shortcomings of DeBettencourt mentioned above. Moreover, Applicant submits that Wood fails to teach or suggest the particular workload balancing claimed; that is, workload balancing among heterogeneous and/or geographically distant systems and moving a job from one system to another. Instead, Wood addresses how to backfill schedule a job within a sub-pool of homogeneous systems.

Therefore, for at least the reasons noted above, Applicant submits that claim 1 cannot be rendered obvious over DeBettencourt in view of Wood.

Applicant submits that the dependent claims are allowable for the same reasons as the independent claims from which they directly or ultimately depend, as well as for their additional limitations.

For example, with regard to claim 2, the final Office Action alleges that DeBettencourt teaches the scheduler on each system being adapted to perform backfill scheduling. However, this is in stark conflict with the admission on page 3 that DeBettencourt does not teach backfill scheduling. Moreover, as noted above, the agents in DeBettencourt are not schedulers.

Therefore, for at least the reasons noted above, Applicant submits that claim 2 cannot be rendered obvious over DeBettencourt in view of Wood.

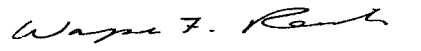
CONCLUSION

Applicant submits that the dependent claims not specifically addressed herein are allowable for the same reasons as the independent claims from which they directly or ultimately depend, as well as for their additional limitations.

For all the above reasons, Applicant maintains that the claims of the subject application define patentable subject matter and earnestly request allowance of claims 1-3 and 6-7

If a telephone conference would be of assistance in advancing prosecution of the subject application, Applicant's undersigned attorney invites the Examiner to telephone him at the number provided.

Respectfully submitted,



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